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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/812,019	03/20/2001	Bartolomeo Italo Tirloni	05788.0159	2680
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WASHINGTON, DC 20006

EXAMINER

STAHL, MICHAEL J

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 11/08/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/812,019

Applicant(s)

TIRLONI, BARTOLOMEO ITALO

Examiner

Mike Stahl

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-- The MAILING DATE of this communication appears on the reverse sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 35-67 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 59-67 is/are allowed.
- 6) ☒ Claim(s) 35,38,40,42,43,45,51,54 and 56 is/are rejected.
- 7) ☒ Claim(s) 35-37,39,41,44,46-50 and 52-58 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 3/20/01 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

Information Disclosure Statement

1. The documents submitted March 20, 2001 have been considered. Initialed copies of form PTO-1449 are attached.

Priority

2. Applicant's claims for priority to US provisional application 60/104,636 filed 10/16/1998, PCT/EP99/06958 filed 9/21/1999, and EPO application 98117828.8 filed 9/21/1998 are acknowledged.

Drawings

3. Figs. 5 and 12 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claims 35, 54, 56, and 61 are objected to because of the following informalities: In claim 35 line 12, "surround" should be "surrounding". In claim 54 lines 4, 9, 11, 15, and 18, and in claim 56 line 2, each occurrence of "perform" should be "preform". In claim 61, "claim" should be inserted before "59". Appropriate correction is required.

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Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 35, 38, 40, 42, 43, 45, 51, 54, and 56 are rejected under 35 U.S.C. 102(b) as being anticipated by Fotheringham (US 5013131).

Fotheringham discloses in fig. 8 a core index profile which meets the limitations of claim 35. For purposes of the following discussion, index differences and layer widths have been estimated directly from fig. 8. The fiber includes an outer cladding having an index of about 1.4572 (zero index difference), inner core having a maximum index of about 1.4660 (index difference of 0.0088), a first layer surrounding the core having a minimum index of about 1.4445 (index difference of -0.0127), a second layer surrounding the first layer having a maximum index of about 1.4630 (index difference of 0.0048), and a third layer (designated by 11) surrounding the second layer and having a positive index difference. The width of the second layer, measured between the points where its profile intersects the cladding index, is approximately 4 μm . The ratio of the index differences of the second layer and the first layer is $0.0048 / 0.0127$ or about 38 %. The core profile as described above also satisfies claims 38 and 40. As to claims 42, 43, and 51, the fibers in Fotheringham are generally designed to have a zero-dispersion wavelength of roughly 1300 nm (col. 7 lines 61-68). As to claim 45, it assumed that the Fotheringham fiber is functional over the recited range.

As to claims 54 and 56, Fotheringham discloses an index profile for a finished fiber as described above. Fibers are most commonly made by creating a preform having a corresponding desired index profile, then heating and drawing the preform into a fiber. It is asserted that a manufactured fiber corresponding to fig. 8 in Fotheringham would be made by this method.

Allowable Subject Matter

7. Claims 59-67 are allowed. Claims 36-37, 39, 41, 44, 46-50, 52-53, 55, and 57-58 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Independent claim 59 requires that the outside ring has a higher peak index than the central core, and that the dispersion slope is less than $0.05 \text{ ps/nm}^2/\text{km}$ over the 1530-1650 nm range. Fotheringham clearly lacks the first feature. None of the disclosed embodiments have an outer ring (e.g. 11 in fig. 8) having a higher index than the core. As to the dispersion slope requirement, Fotheringham does indicate a preference for a low dispersion slope but fails to provide a dispersion curve corresponding to the index profile of fig. 8. Fig. 1 is a dispersion curve related to the profile of fig. 5, but the fig. 5 profile appears to represent an intermediate calculation stage instead of a finished fiber. Fig. 1 also does not show the behavior of the dispersion out to 1650 nm, so it is unknown how sharply the negative dispersion increases beyond 1600 nm. None of the other references of record disclose or suggest a fiber which meets all the limitations of claim 59. Claims 60-67 are allowed by dependence from claim 59.

As to claims 36, 37, and 55, the ratio of index differences of the second and first layers is about 38 % for the fig. 8 profile as noted above. Fotheringham offers no other examples of a

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finished fiber profile having this ratio less than 20 % as required by claims 36 and 55, or having a second layer with zero index difference as required by claim 37. As to claim 39, Fotheringham does not show or suggest an additional layer surrounding the third layer 11 and having a negative index difference. As to claim 41, Fotheringham also does not teach or suggest the third layer 11 having a higher index than the core. Regarding claims 44, 46, 47, 50, 57 and 58, as noted above Fotheringham does not provide a dispersion curve for the fig. 8 profile so it is impossible to conclusively determine (or reasonably estimate) whether the fig. 8 fiber meets the recited limits on dispersion slope. As to claims 48 and 49, again Fotheringham does not provide details for the dispersion of the fig. 8 fiber, but appears to teach away from these claims by preferring to have one of the zero dispersion wavelengths at about 1550 nm (col. 2 lines 23-31; claim 8). As to claims 52 and 53, Fotheringham does not mention any values for the effective area at 1550 nm, and merely specifies a mode field diameter of about 6.8 μm at 1300 nm. In summary, neither Fotheringham nor the other cited references teach or suggest all the limitations of claims 36-37, 39, 41, 44, 46-50, 52-53, 55, and 57-58.

Conclusion

8. The references made of record and not relied upon is considered pertinent to applicant's disclosure. Antos et al. (US 5999679) discloses a fiber embodiment (fig. 2; claims 7-8) which is pertinent to claim 35, but the minimum value of the ratio of index differences for the first and second layers is about 55 % (using the minimum difference of 0.2 % for the first layer and the maximum difference of 0.45 % for the second layer from the ranges recited by claim 8).

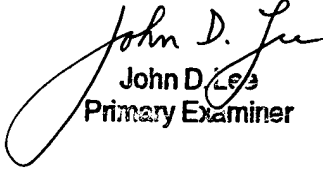
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Tsukitani et al. (US 6301419) discloses a fiber profile (fig. 10B) which would satisfy claim 35 if the reference was available as prior art. Cain et al. (US 6430347) does not qualify as prior art but discloses fibers having multiple positive-index rings.

9. Any inquiry concerning this communication should be directed to Mike Stahl at (703) 305-1520. Inquiries of a general or clerical nature (e.g., a request for a missing form or paper, etc.) should be directed to the Technology Center 2800 receptionist at (703) 308-0956 or to the technical support staff supervisor at (703) 308-3072.

MJS

Michael J. Stahl
Patent Examiner
Art Unit 2874


John D. Lee
Primary Examiner

October 30, 2002